

FORM PTO-1449 (A and B (Modified))		APPLICATION NO.: 10/020,004	ATTY. DOCKET NO.: H00498.70164.US
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		FILING DATE: December 11, 2001	CONFIRMATION NO.: 7232
		APPLICANT: Charles M. Lieber.	
		GROUP ART UNIT: 2826	EXAMINER: Greene, Pershelle L.
Sheet 1	of 3		

U.S. PATENT DOCUMENTS

Examine r's Initials#	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or of issue of Cited Document MM-DD-YYYY
		Number	Kind Code		
VAMS	1.	4,673,474		Ogawa	06-16-1987
	2.	4,939,556		Eguchi et al.	07-03-1990
	3.	5,089,545		Pol	02-18-1992
	4.	5,274,602		Glenn	12-28-1993
	5.	5,453,970		Rust et al.	09-26-1995
	6.	5,475,341		Reed	12-12-1995
	7.	5,589,692		Reed	12-31-1996
	8.	5,640,343		Gallagher et al.	06-17-1997
	9.	5,739,057		Tiwari et al.	04-14-1998
	10.	5,747,180		Miller et al.	05-05-1998
	11.	5,751,156		Muller et al.	05-12-1998
	12.	5,830,538		Gates et al.	11-03-1998
	13.	5,847,565		Narayanan	12-08-1998
	14.	5,858,862		Westwater et al.	01-12-1999
	15.	5,897,945		Lieber et al.	04-27-1999
	16.	5,903,010		Flory et al.	05-11-1999
	17.	5,997,832		Lieber et al.	12-07-1999
	18.	6,036,774		Lieber et al.	03-14-2000
	19.	6,038,060		Crowley	03-14-2000
	20.	6,060,724		Flory et al.	05-09-2000
	21.	6,069,380		Chou et al.	05-30-2000
	22.	6,128,214		Kuekes et al.	10-03-2000
	23.	6,143,184		Martin et al.	11-07-2000
	24.	6,149,819		Martin et al.	11-21-2000
	25.	6,203,864	B1	Zhang et al.	03-20-2001
	26.	6,256,767	B1	Kuekes et al.	07-03-2001
	27.	6,325,904	B1	Peeters	12-04-2001
	28.	6,528,020	B1	Dai et al.	03-04-2003

FOREIGN PATENT DOCUMENTS

Examiner's Initials#	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/ Country	Number	Kind Code			
VAMS	29.	EP	1 087 413	A2	Lucent Technologies, Inc.	03-28-2001	
VAMS	30.	JP	11-11917	A2	Canon Inc.	01-19-1999	Y (abstract)
VAMS	31.	WO	98/39250	A1	William Marsh Rice University	09-11-1998	



Examiner's Initials#	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/Country	Number	Kind Code			
VAMS	32.	WO	98/42620	A1	Japanese Fine Ceramics Center	10-06-1999	Y (abstract)
	33.	WO	00/09443	A1	Board of Trustees of the Leland Stanford Junior University	02-24-2000	
	34.	WO	00/17101	A1	William Marsh Rice University	03-30-2000	
	35.	WO	00/19494	A1	Xidex Corporation	04-06-2000	
	36.	WO	01/03208	A1	President and Fellow of Harvard College (Original and Correction Version)	01-11-2001	
	37.	WO	02/17362	A2	President and Fellows of Harvard College	02-28-2002	
	38.	WO	02/48701	A2	President and Fellows of Harvard College	06-20-2002	
✓	39.	WO	03/005450	A2	President and Fellows of Harvard College	01-16-2003	

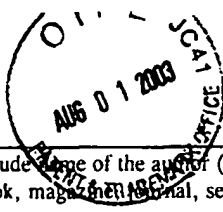
OTHER ART - NON PATENT LITERATURE DOCUMENTS

Examiner's Initials#	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
VAMS	40.	CHEN ET AL., "Large On-Off Ratios and Negative Differential Resistance in a Molecular Electronic Device", <i>Science</i> , November 19, 1999, vol. 286, , pgs. 1550-51	
	41.	COLLIER ET AL., "Electronically Configurable Molecular-Based Logic Gates", <i>Science</i> , July 16, 1999, vol. 285, pp. 391-394	
	42.	CUI ET AL., "Nanowire nanosensors for highly sensitive and selective detection of biological and chemical species", <i>Science</i> , August 17, 2001, vol. 293, pp. 1289-1292	
	43.	CUI ET AL., "Functional Nanoscale Electronic Devices Assembled Using Silicon Nanowire Building Blocks", <i>Science</i> , February 2, 2001, vol. 291, pp. 851-853	
	44.	CUI ET AL., "Diameter-controlled synthesis of single-crystal silicon nanowires", <i>Applied Physics Letters</i> , April 9, 2001, vol. 78, No. 15, . pp. 2214-2216	
	45.	CUI ET AL., "Doping and Electrical Transport in Silicon Nanowires", <i>The Journal of Physical Chemistry</i> , June 8, 2000, vol. 104, no. 22, , pp. 5213-5216	
	46.	CUI ET AL., "Functional nanoscale electronic devices assembled using silicon nanowire building blocks", <i>Science</i> , February 2, 2001, vol. 291, pp. 851-853	
	47.	DUAN ET AL., "Indium phosphide nanowires as building blocks for nanoscale electronic and optoelectronic devices", January 4, 2001, <i>Nature</i> , vol. 409, pp. 66-69	
	48.	DUAN ET AL., "General Synthesis of Compound Semiconductor Nanowires", <i>Adv. Materials</i> , 2000, vol. 12, no. 4, pp. 298-302, published on Web 02/17/2000	
	49.	DUAN ET AL., "Laser-Assisted Catalytic Growth of Single Crystal GaN Nanowires", <i>J. Am. Chem. Soc.</i> 2000, October 18, 1999, vol. 122, , pp. 188-189; published on Web 12/18/99	
	50.	GIVARGIZOV, "Fundamental aspects of VSI. growth", <i>Journal of Crystal Growth</i> , 1975, vol. 31, pp. 20-30	
	51.	GUDIKNEN ET AL., "Diameter-Selective Synthesis of Semiconductor Nanowires", <i>J. Am. Chem. Soc.</i> 2000, June 6, 2000, vol. 122, pp. 8801-8802	
	52.	GUDIKNEN ET AL., "Growth of nanowire superlattice structures for nanoscale photonics and electronics", <i>Nature</i> , 2002, vol. 415, pp. 617-620	
	53.	HARAGUCHI ET AL., "Polarization dependence of light emitted from GaAs p-n junctions in quantum wire crystals", <i>Journal of Applied Physics</i> , April 1994, vol. 75, no. 8, pp. 4220-4225	
	54.	HIRUMA ET AL., "Self-organized growth of GaAs/InAs heterostructure nanocylinders by organometallic vapor phase epitaxy", <i>Journal of Crystal Growth</i> , 1996, vol. 163, pp. 226-231	
	55.	HUANG ET AL., "Directed Assembly of One-dimensional Nanostructures into Functional Networks", <i>Science</i> , January 26, 2001, vol. 291, pp. 630-633	
	56.	HUANG ET AL., "Logic gates and computation from assembled nanowire building blocks", <i>Science</i> , 2000, vol. 287, pp. 624-625	
	57.	KANJANACHUCHAI ET AL., "Coulomb blockade in strained-Si nanowires on leaky virtual substrates", <i>Semiconductor Science and Technology</i> , 2001, vol. 16, pp. 72-76	
	58.	KONG ET AL., "Nanotube molecular wires as chemical sensors", <i>Science</i> , January 28, 2000, vol. 287, pp. 622-625	
✓	59.	WANG ET AL., "Highly polarized photoluminescence and photodetection from single indium phosphide nanowires", <i>Science</i> , 2001, vol. 293, pp. 1455-1457	

Serial No.: 10/020,004

Page 3 of 3

Conf. No.: 7232



Examiner's Initials#	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
VAMJ	60.	WU ET AL., "Block-by-block growth of single-crystalline Si/SiGe superlattice nanowires". web release date. January 19, 2002, http://pubs.acs.org/hotartcl/nalefd/2002/nl0156888_rev.html	

EXAMINER	Victor A. Mandalaga	DATE CONSIDERED	1-26-05
----------	---------------------	-----------------	---------

#EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered.
Include copy of this form with next communication to applicant.



FORM 1449/1450 (Modified)

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

Sheet

1

of

3

APPLICATION NO.: 10/020,004

ATTY. DOCKET NO.: H0498.70164US00

FILING DATE: December 11, 2001

CONFIRMATION NO.: 7232

APPLICANT: Charles M. Lieber, et al.

GROUP ART UNIT: 2826

EXAMINER: Victor A. Mandala

U.S. PATENT DOCUMENTS

Examiner's Initials	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or of issue of Cited Document MM-DD-YYYY
		Number	Kind Code		
VAMS	72	3,873,359		Lando	03-25-1975
	73	3,873,360		Lando	03-25-1975
	74	3,900,614		Lando	08-19-1975
	75	5,252,835		Lieber et al.	10-12-1993
	76	5,512,131		Kumar et al.	04-30-1996
	77	5,537,075		Miyazaki	07-16-1996
	78	5,581,091		Moskovits et al.	12-03-1996
	79	5,726,524		Debe	03-10-1998
	80	5,840,435		Lieber et al.	11-24-1998
	81	5,864,823		Levitan	01-26-1999
	82	6,159,742		Lieber et al.	12-12-2000
	83	6,190,634	B1	Lieber et al.	02-20-2001
	84	6,559,468	B1	Kuekes et al.	05-06-2003
	85	6,716,409	B2	Hafner et al.	04-06-2004
	86	2002/0084502	A1	Jang et. al.	07-04-2002
	87	2002/0112814	A1	Hafner et al.	08-22-2002
	88	2002/0122766	A1	Lieber et al.	09-05-2002
	89	2002/0130311	A1	Lieber et al.	09-19-2002
	90	2002/0130353	A1	Lieber et al.	09-19-2002
	91	2002/0146714	A1	Lieber et al.	10-10-2002
	92	2002/0172820	A1	Majumdar et al.	11-21-2002
	93	2002/0175408	A1	Majumdar et al.	11-28-2002
	94	2003/0089899	A1	Lieber et al.	05-15-2003
	95	2003/0156992	A1	Anderson et al.	08-21-2003
	96	2003/0186522	A1	Duan et al.	10-02-2003
	97	2003/0200521	A1	DeHon et al.	10-23-2003
	98	2004/0005723	A1	Empedocles et al.	01-08-2004
	99	2004/0026684	A1	Empedocles	02-12-2004
	100	2004/0095658	A1	Buretea	05-20-2004
	101	2004/0112964	A1	Empedocles et al.	06-17-2004
	102	2004/0118448	A1	Scher	06-24-2004
	103	2004/0136866	A1	Pontis	07-15-2004
V	104	2004/0146560	A1	Whitehead	07-29-2004

FOREIGN PATENT DOCUMENTS

Examiner's Initials	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/ Country	Number	Kind Code			
VAMS	105	WO	95/02709	A2	President and Fellows of Harvard College	01-29-1995	



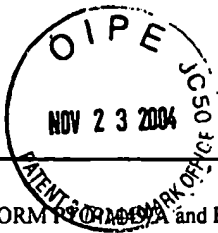
FORM PTO/A and B (Modified) INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICATION NO.: 10/020,004	ATTY. DOCKET NO.: H0498.70164US00
		FILING DATE: December 11, 2001	CONFIRMATION NO.: 7232
		APPLICANT: Charles M. Lieber, et al.	
		GROUP ART UNIT: 2826	EXAMINER: Victor A. Mandala
Sheet	2	of	3

FOREIGN PATENT DOCUMENTS

Examiner's Initials	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/Country	Number	Kind Code			
VAMS	106	WO	96/29629	A2	President and Fellows of Harvard College	09-26-1996	
	107	WO	97/33737	A1	President and Fellows of Harvard College	09-18-1997	
	108	WO	97/34025	A1	President and Fellows of Harvard College	09-18-1997	
	109	WO	00/51186	A1	Josesh E. Clawson, Jr.	08-31-2000	
	110	WO	02/080280	A1	The Regents of the University of California	10-10-2002	
	111	WO	03/053851	A2	President and Fellows of Harvard College	07-03-2003	
	112	WO	03/063208	A2	California Institute of Technology	07-31-2003	
	113	WO	04/010552	A1	President and Fellows of Harvard College	01-29-2004	
	114	WO	04/032190	A2	Nanosys, Inc.	04-15-2004	
	115	WO	04/032193	A2	Nanosys, Inc.	04-15-2004	
	116	WO	04/034025	A2	Nanosys, Inc.	04-22-2004	

OTHER ART — NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
VAMS	117	CHEUNG, C.L., et al. "Diameter-Controlled Synthesis of Carbon Nanotubes," <i>J. Phys. Chem. B.</i> , 106, (2002), pp: 2429-2433	
	118	DUAN, X., et al., "Nonvolatile Memory and Programmable Logic from Molecule-Gated Nanowires," <i>Nano Letters</i> , 2(5), (2002), pp: 487-490	
	119	DUAN, X., et al., "Single-nanowire electrically driven lasers," <i>Nature</i> , 421, (2003), pp: 241-245	
	120	GUDIKNEN, M., et al., "Synthetic Control of the Diameter and Length of Single Crystal Semiconductor Nanowires," <i>J. Phys. Chem. B</i> , 105, (2001), pp: 4062-4064	
	121	GUDIKNEN, M, et al., "Size-Dependent Photoluminescence from Single Indium Phosphide Nanowires," <i>J. Phys. Chem. B</i> , 106, (2002), pp: 4036-4039	
	122	HOLMES, J. et al., "Control of Thickness and Orientation of Solution-Grown Silicon Nanowires," <i>Science</i> , 287, (2000), pp: 1471-1473	
	123	HU, J., et al., "Controlled growth and electrical properties of heterojunctions of carbon nanotubes and silicon nanowires," <i>Nature</i> , 399, (1999), pp: 48-51	
	124	HU, J., et al., "Chemistry and Physics in One Dimension: Synthesis and Properties of Nanowires and Nanotubes," <i>Acc. Chem. Res.</i> , 32, (1999), pp: 435-445	
	125	HU, S., et al., "Serpentine Superlattice Nanowire-Array Lasers," <i>J. of Quant. Electron.</i> , 8, (1995), pp: 1380-1388	
	126	HUANG, Y. et al., "Gallium Nitride Nanowire Nanodevices," <i>Nano Letters</i> , 2(2), (2002), pp: 101-104	
	127	HUANG, M., et al., "Room-Temperature Ultraviolet Nanowire Nanolasers," <i>Science</i> , 292, (2001), pp: 1897-1899	
	128	JOHNSON, J., et al., "Single gallium nitride nanowire lasers," <i>Nature</i> , 1, (2002), pp: 106-110	
	129	JOHNSON, J., et al., "Single nanowire lasers," <i>J. of Phys. Chem.</i> , 105(46), (2001), pp: 11387-11390	
	130	JOSELEVICH, E., et al., "Vectorial Growth of Metallic and Semiconducting Single-Wall Carbon Nanotubes," <i>Nano Letters</i> , 2(20), (2002), pp: 1137-1141	
	131	KONG, J., et al., "Chemical vapor deposition of methane for single-walled carbon nanotubes," <i>Chem. Phys. Letters</i> , 292, (1998), pp: 567-574	



FORM PTO/AIA and B (Modified)

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

APPLICATION NO.: 10/020,004

ATTY. DOCKET NO.: H0498.70164US00

FILING DATE: December 11, 2001

CONFIRMATION NO.: 7232

APPLICANT: Charles M. Lieber, et al.

GROUP ART UNIT: 2826

EXAMINER: Victor A. Mandala

Sheet 3 of 3

OTHER ART — NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
VAMS	132	KONG, J., et al., "Synthesis of individual single-walled carbon nanotubes on patterned silicon wafers," <i>Nature</i> , 395, (1998), pp: 878-881	
	133	LAUHON, L., "Epitaxial core-shell and core-multishell nanowire heterostructures," <i>Nature</i> , 420, (2002), pp: 57-61	
	134	MARTEL, R. et al., "Single-and multi-wall carbon nanotube field-effect transistors," <i>Applied Physics Letters</i> , 73(17), (1998), pp: 2447-2449	
	135	RUECKES, T., "Carbon Nanotube-Based Nonvolatile Random Access Memory for Molecular Computing," <i>Science</i> , 289, (2000), pp: 94-97	
	136	STAR, A., et al., "Preparation and Properties of Polymer-Wrapped Single-Walled Carbon Nanotubes," <i>Angew. Chem. Int. Ed.</i> , 40(9), (2001), pp: 1721-1725	
	137	THESS, A., "Crystalline Ropes of Metallic Carbon Nanotubes," <i>Science</i> , 273, (1996), pp: 483-487	
	138	WANG, N. et al., "SiO ₂ -enhanced synthesis of Si nanowires by laser ablation," <i>Applied Physics Letters</i> , 73(26), (1998), pp: 3902-3904	
	139	WEI, Q., et al., "Synthesis of Single Crystal Bismuth-Telluride and Lead Telluride Nanowires for New Thermoelectric Materials," <i>Mat. Res. Soc. Symp. Proc.</i> , 581, (2000), pp: 219-223	
	140	WONG, S., et al., "Covalently functionalized nanotubes as nanometre-sized probes in chemistry and biology," <i>Nature</i> , 394, (1998), pp: 52-55	
	141	YANG, P., et al., "Controlled Growth of ZnO Nanowires and Their Optical Properties," <i>Adv. Funct. Mater.</i> , 12(5), (2002), pp: 323-331	
	142	ZHOU, G. et al., "Growth morphology and micro-structural aspects of Si nanowires synthesized by laser ablation," <i>J. of Crystal Growth</i> , 197, (1999), pp: 129-135	
	143	International Search Report in PCT Application No. PCT/US03/22061, Int'l Filing Date, 07/16/2003	
	144	International Search Report in PCT Application No. PCT/US01/48230, Int'l Filing Date, 12/11/2001	
	145	International Preliminary Examination Report in PCT Application No. PCT/US01/48230, Int'l Filing Date, 12/11/2001	
	146	Written Opinion in PCT Application No. PCT/US01/48230, Int'l Filing Date, 12/11/2001	
	147	Office Action mailed 6/30/04 in co-pending U.S. Patent Application No. 10/196,337, filed 07/16/02	
	148	Office Action mailed 9/15/04 in co-pending U.S. Patent Application No. 09/935,776 filed 08/22/01	

EXAMINE R

DATE CONSIDERED

#EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered.
Include copy of this form with next communication to Applicant.



FORM PTO-1449/A and B (Modified) INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICATION NO.: 10/020,004	ATTY. DOCKET NO.: H0498.70164US00
		FILING DATE: December 11, 2001	CONFIRMATION NO.: 7232
		APPLICANT: Charles M. Lieber, et al.	
		GROUP ART UNIT: 2826	EXAMINER: Greene, Pershelle L.
Sheet	1	of	1

U.S. PATENT DOCUMENTS

Examiner's Initials	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or of issue of Cited Document MM-DD-YYYY
		Number	Kind Code		

FOREIGN PATENT DOCUMENTS

Examiner's Initials	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/ Country	Number	Kind Code			

OTHER ART — NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)	
VAMS	72	WONG, S.S., et al., "Covalently functionalized nanotubes as nanometer probes for chemistry and biology," <i>Nature</i> 394, (1998), pp. 52-55.		

EXAMINER <i>Victor A. Mandalaga</i>	DATE CONSIDERED <i>1-26-05</i>
-------------------------------------	-----------------------------------

#EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

*a copy of this reference is not provided as it was previously cited by or submitted to the office in a prior application, Serial No. __, filed __, and relied upon for an earlier filing date under 35 U.S.C. 120 (continuation, continuation-in-part, and divisional applications).

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

☒ **BLACK BORDERS**

☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**

☐ **FADED TEXT OR DRAWING**

☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**

☐ **SKEWED/SLANTED IMAGES**

☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**

☐ **GRAY SCALE DOCUMENTS**

☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**

☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**

☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.